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FORM (REV	1 PTO-1	TO-1390 (Modified) U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE ATTORNEY'S DOCKET NUMBER 2000)	BER							
l		TRANSMITTAL LETTER TO THE UNITED STATES 70301/56223								
			U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR							
		CONCERNING A FILING UNDER 35 U.S.C. 371 09/9142								
INT	ERNA	NATIONAL APPLICATION NO. INTERNATIONAL FILING DATE PRIORITY DATE CLAIMED								
TITI	EOE	PCT/EP00/11717 November 24, 2000 December 24, 2000	1999							
FO:	OT F	T PROSTHESIS CANT(S) FOR DO/EO/US								
Lat.	e DH	BIEDERMANN and Urs SCHNEIDER								
App	licant	ant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other info								
1.	×		ormation:							
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3.		of separation of items concerning a fining under 35 U.S.C. 3/1.								
J.		This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must i (6), (9) and (24) indicated below.	nclude itens (5),							
4.		☐ The US has been elected by the expiration of 19 months from the priority date (Article 31).								
5.	\boxtimes									
		a. is attached hereto (required only if not communicated by the International Bureau).								
		b. 🛮 has been communicated by the International Bureau.								
.79		c. \square is not required, as the application was filed in the United States Receiving Office (RO/US).								
	\boxtimes	An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)).								
111122		a. 🖾 is attached hereto.								
ľ.		b. has been previously submitted under 35 U.S.C. 154(d)(4).								
17.		to the training of the international Application under FC1 Affice 19 (33 U.S.C. 3/1 (c)(3))								
ije i			a. are attached hereto (required only if not communicated by the International Bureau).							
1000		b. have been communicated by the International Bureau.								
			c. have not been made; however, the time limit for making such amendments has NOT expired.							
6		d. have not been made and will not be made.								
0.	×	An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).								
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12.	\boxtimes	Examination Report (FC1/IPEA/409).								
13.		as 13 to 20 below concern document(s) or information included: An Information Disclosure Statement under 37 CFR 1.97 and 1.98.								
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22.	\boxtimes	Certificate of Mailing by Express Mail								
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Attorney Docket No. 70301/56,223

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: Lutz Biedermann, et al.

National stage of PCT/EP00/11717

FILED:

Herewith

FOR:

FOOT PROSTHESIS

CERTIFICATE OF MAILING

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being deposited with the United States Postal Service, in an envelope as "Express Mail Post Office Addressee" Mailing Label Number EL895418750US addressed to BOX DO/EO/US, Commissioner of Patents and Trademarks, Washington, D.C. 20231 on August 22, 2001.

Barbaranne Jenness

Box DO/EO/US Commissioner for Patents Washington, D.C. 20231

Sir:

PRELIMINARY AMENDMENT

Please amend the subject application as follows and before calculating the filing fee therefor.

IN THE CLAIMS:

Please cancel claims 1-8 and insert the following new claims.

9. A foot prosthesis comprising:

a first spring element extending from a toe region to a lower leg region;

a second spring element extending from a heel region to said lower leg region; said spring elements being connected to each other at said lower region; and a tension element having two ends, which is connected with its one end to a forward region of the first spring element and connected with its other end at said heel region of the second spring element.

- 10. The foot prosthesis as claimed in claim 9, wherein the first and second spring elements are each a leaf spring having a ground-side surface, the springs being arranged and structured to rest against each other with their ground-side surfaces facing each other.
- 11. The foot prosthesis as claimed in claim 10, wherein said tension element is firmly connected to the ground-side surface of the forward region of the first spring element and of the heel region of the second spring element.
- 12. The foot prosthesis as claimed in claim 10, wherein said tension element is fixed at the forward end of said first spring element on an upper side thereof such, said first spring element having a slit-like opening in said forward region through which said tension element is fed toward said second spring element.

- 13. The foot prosthesis as claimed in claim 9, further comprising an adapter that connects the spring elements at the lower leg region for connection to a lower leg portion.
- 14. The foot prosthesis as claimed in claim 9, wherein said tension element is a ribbon-like element.
- 15. The foot prosthesis as claimed in claim 9, wherein said tension element is firmly connected to a ground side of each of said spring elements.
- 16. The foot prosthesis as claimed in claim 9, wherein said tension element is fixed at the forward end of said first spring element on an upper side thereof such, said first spring element having a slit-like opening in said forward region through which said tension element is fed toward said second spring element.
- 17. The foot prosthesis as claimed in claim 9, wherein said first and second spring elements are formed as a concave shape when viewed from the top.
- 18. The foot prosthesis as claimed in claim 9, wherein said first and second spring elements comprise a carbon fiber composite material and said tension element comprises a stretch-free material.

Lutz Biedermann, et al. PCT/EP00/11717 Page 4

REMARKS

Early and favorable action is requested.

Respectfully submitted,

Date: 2/1/14/1/

Registration No. 26,964

Dike, Bronstein, Roberts & Cushman Intellectual Property Practice Group EDWARDS & ANGELL, LLP P.O. Box 9169 Boston, MA 02209 (617) 439-4444

BOS2_172288.1

PCT/EP00/11717 BIEDERMANN MOTECH GmbH

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Foot prosthesis

The invention relates to a foot prosthesis. From the brochure BIEDERMANN MOTECH, Unterschenkel-Systeme (lower leg systems), page 15, a foot prosthesis is known which is formed by a first spring element and a second spring element connected thereto. The first spring element extends from the toe region to the lower leg region and is formed in a convex fashion as viewed from the top. In the lower leg region the free end supports an adapter for connecting to the lower leg element of a prosthesis. In the region around the ball of the foot the spring element is firmly connected on its lower side to the upper side of the front foot side end of a second spring element by means of screws, which second spring element extends with its free end to the toe region. The first spring element consists of a carbon fiber composite material and has the appearance of a leaf spring having a width of about 4 cm in the ball region and a thickness of 3 to 4 mm.

It is an object of the invention to provide a foot prosthesis with even better gait characteristics.

This object is achieved by a foot prosthesis according to claim 1.

Further embodiments of the invention are characterized in the dependent claims.

Further features and advantages of the invention will be apparent from the description of embodiments with respect to the figures, where

- Fig. 1 is a lateral view of a first embodiment of the invention;
- Fig. 2 is a corresponding lateral view of a second embodiment;
- Fig. 3 is an illustration similar to the one in Fig. 2;
- Fig. 4 is a plan view of the object shown in Fig. 3 in the direction of arrows A'-A; and
- Fig. 5 shows the object shown in Fig. 1 in an artificial foot represented in section.

The first embodiment shown in Fig. 1 comprises a first spring element 1 and a second spring element 2. Each of the spring elements is formed in a concave fashion as viewed from the top. The first spring element 1 extends with one free end 3 from the toe region to its opposite free end 4 which is held in an adapter 5 that can be connected to the lower leg portion of a prosthesis. The second spring element 2 extends with one of its free ends 6 from the heel to its other free end 7 which is held in the adapter 5.

The bending of the two spring elements is selected such that in their inoperative position the two ground-side free ends 3, 6 are supported flat on the ground and the opposite free ends 4, 7 abut in parallel fashion with their convex-side surface, as can be seen in the figure, and are held in a slot 7' of the adapter 5 and are fixed in the adapter 5 by a locking screw 8.

As can be seen from the figures, the front foot region of the first spring element 1 and the heel region of the second spring element 2 are connected to each other through a tension element 9. As can be best seen in Fig. 4, the tension element is formed in a ribbon-like manner and is formed as a stretch-free tension ribbon. The tension element 9 is connected in a tension-proof fashion with one of its ends as close as possible to the free end 6 of the second spring element 2 using rivets 10 and with its other free end close to the free end of the first spring element 1 using rivets 11. The connection location of the

rivets 11 is selected such that the first spring element 1 in its normal position is still located a distance from the ground. This provides the advantage that during the walking the tension element 9 does not always rest on the ground and will thus be spared. The connecting location with the rivets 11 should be as close as possible to the free end 3 of the first spring element.

The foot prosthesis formed in this manner provides for especially advantageous gait characteristics starting by setting the foot in its heel region on the ground and finishing with a rolling movement through the front foot.

The embodiment shown in Fig. 2 coincides with respect to the shape of the spring elements, the connection to the adapter and the provision of a tension element.

In order to achieve the advantage that the tension element 9' is fixed as close as possible to the free ends 3, 6 using the rivets 10, 11 and that the tension element acts on the outermost free ends on the one hand, and the advantage that the tension element does not completely rest on the ground on the other hand, there is provided, a distance from the free end 3 where the first spring element 1 has just enough cleareance from the ground, a slit 12 extending along a direction transverse to the longitudinal direction of the first spring element 1', as can be best seen in Fig. 4. This slit is desigend to lead the tension element 9' across the slit 12 all the way to the forward free end 3 of the first spring element 1'. Starting from the slit 12, the tension element 9' is arranged in closely fitting relationship with the convex portion of the spring element 1' and is firmly connected thereto in the toe region by rivets 11, as is best seen in Fig. 2.

Alternatively, it is also possible to arrange the tension element 9 at the bottom surface of the first spring element 1

and all the way to the free end, if it is accepted that the tension element will then rest on the ground.

Referring to Fig. 5, the embodiment described first is introduced into an artificial foot 13 in a basically known fashion.

Claims

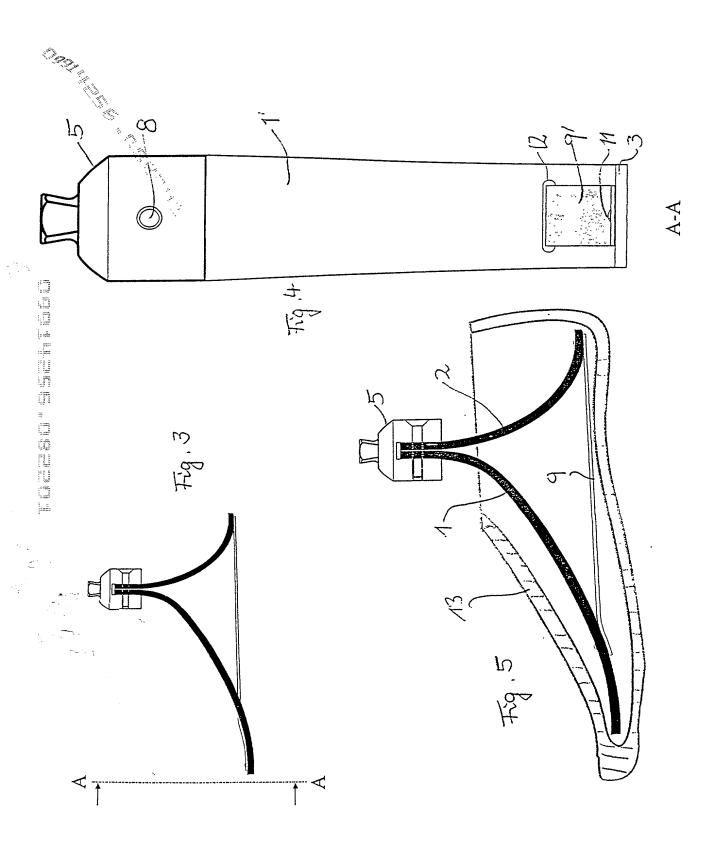
- 1. A foot prosthesis comprising a first spring element (1) extending from a toe region to a lower leg region; a second spring element (2) extending from a heel region to said lower leg region; said spring elements (1, 2) being connected to each other by their lower leg side first ends (4, 7); and a tension element (9, 9') connected to the forward region of the foot (3) with its one end and connected to said heel region (6) of the spring elements (1, 2) with its other end.
- 2. The foot prosthesis as claimed in claim 1, characterized in that the two spring elements (1, 2) are formed as leaf springs resting against each other with their ground-side surfaces at their connecting point.
- 3. The foot prosthesis as claimed in claims 1 or 2, characterized in that the connected ends (6, 7) are connected by an adapter (5) for connecting to a lower leg portion.
- 4. The foot prosthesis as claimed in any one of claims 1 to 3, characterized in that said tension element (9, 9') is formed in a ribbon-like fashion.
- 5. The foot prosthesis as claimed in any one of claims 1 to 4, characterized in that said tension element (9, 9') is firmly connected at the ground-side with each of its ends to said spring elements (1, 2).
- 6. The foot prosthesis as claimed in any one of claims 1 to 4, characterized in that said tension element (9, 9') is fixed at the forward end of said first spring element (1) at the upper side thereof such that a slit-like recess (12) provided a distance from said forward end in said spring element is fed toward said second spring element (2).

- 7. The foot prosthesis as claimed in any one of claims 1 to 6, characterized in that said spring elements (1, 2) are formed as a convex shape when viewed from the top.
- 8. The foot prosthesis as claimed in any one of claims 1 to 7, characterized in that said spring elements (1, 2) are made of a carbon fiber composite material and said tension element (9, 9') is made of a stretch-free material.

Abstract

There is provided a foot prosthesis having especially good gait characteristics. To that end, the prosthesis comprises a first spring element 1 extending from the toe region to the lower leg region and a second spring element 2 extending from the heel region to the lower leg region. The spring elements are formed as leaf-type elements and are connected to each other by their lower leg side first ends 4, 7. There is provided a tension element 9 which is connected in the forward region of the foot with its one end and connected in the heel region 6 to the second spring element.

(Fig. 1)



DIKE, BRONSTEIN, ROBERTS & CUSHMAN INTELLECTUAL PROPERTY GROUP OF EDWARDS & ANGELL, LLP 130 Water Street

BL 748-15420.1 Docket No.

70301/56223

Page 1 of 4

Boston, Massachusetts 02109

DECLARATION AND POWER OF ATTORNEY

As a below named inventor, I hereby declare that: My residence, post office address and citizenship are as stated below next to my name. I believe I am the original, first and sole inventor (if only one name is listed at 201) below or an original, first and joint inventor (if plural names are listed at 201-206 below) of the subject matter which is claimed and for which a patent is sought on the invention entitled: FOOT PROSTHESIS

whic	h is de	scribed and claimed in:
	X	the specification attached hereto.
		the specification in U.S. Application Serial Number, filed on
filed o	 on	the specification in PCT international application Number, ; and was amended on
acknown applied for eight patent for patent	fication owledge cation in prior it or in otent or	by state that I have reviewed and understand the contents of the above identified in including the claims, as amended by any amendment referred to above. I see the duty to disclose information which is material to the examination of this in accordance with Title 37, Code of Federal Regulations, §1.56(a). I hereby claim city benefits under Title 35, United States Code, §119 of any foreign application(s) for ventor's certificate listed below and have also identified below any foreign application in inventor's certificate having a filing date before that of the application on which aimed.

Prior Foreign/PCT Applications and Any Priority Claims Under 35 U.S.C. §119:							
Application No.	Filing Date	Country	Priority Claimed Under 35 U.S.C. §119?				
199 62 851.3	December 24, 1999	Germany	XIYES XXXXXXX				
			□YES □NO				
			□YES □NO				

I hereby claim the benefit under 35 U.S.C. §120 of any United States application(s) or PCT international application(s) designating the United States of America that is/are listed below, and, insofar as the subject matter of each of the claims of this application is not disclosed in that/those prior application(s) in the manner provided by the first paragraph of 35 U.S.C. §112, I acknowledge the duty to disclose material information as defined in 37 CFR §1.56(a) which occurred between the filing date of the prior application(s) and the national or PCT international filing date of this application:

Prior U.S. Applications or PCT International Applications Designating the U.S-Benefit Under 35 U.S.C. §120						
	U.S. Applica	Status (Check One)				
Applica	ation Serial No.	U.S. Filing Date	Pending	Abandoned		
PC	T Applications Desi	gnating the U.S.				
Application No.	Filing Date	U.S. Serial No. Assigned				
PCT/EP00/11717	November 24, 2000					
, 11 cccs,		<u> </u>	<u> </u>			

CLAIM FOR BENEFIT OF PRIOR U.S. PROVISIONAL APPLICATION(S) (35 U.S.C. §119(e))

I hereby claim the benefit under Title 35, United States Code, §119(e) of any United States provisional application(s) listed below:

is and and and	Applicant	Provisional Application Number	Filing Date
125 125 130			
e ego			

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) with full powers of association, substitution and revocation to prosecute this application and transact all business in the Patent and Trademark Office connected therewith.

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(Reg. No. 27,840) (Reg. No. 42,639)

(Reg. No. P-46,778) (Reg. No. P-47,066)

SEND CORRESPONDENCE TO:

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	FULL NAME OF INVENTOR	LAST NAME	FIRST NAME	MIDDLE NAME
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	POST OFFICE ADDRESS	POST OFFICE ADDRESS	Сіту	STATE OR COUNTRY AND ZIP CODE
	<u> </u>			

I hereby further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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Signature of Invertor 201	Signature of Inventor 202
for Duch	Signature of Aventor 202
Date: 14.05.107	Date: 16.5.2001
Signature of Inventor 203	Signature of Inventor 204
Date:	Date:
Signature of Inventor 205	Signature of Inventor 206
Date:	Date: